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A SURVEY OF MOULTING CANADA GEESE ON
THE SNOWDRIFT AND THELON RIVERS
NORTHWEST TERRITORIES: 1990

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ABSTRACT

An aerial survey of moulting Canada Geese was conducted along the Snowdrift and Thelon rivers on 9-10 July, 1990. This was the last of three annual surveys conducted since 1988. The objectives of the survey were: 1) to determine the distribution and abundance of moulting Canada Geese along both rivers, 2) to reassess the importance of key habitat sites along the Thelon River, and 3) to record observations of other bird and mammal species along the survey route.

We observed 391 Canada Geese along the Snowdrift River and 12 807 Canada Geese along the Thelon River. The most heavily used area was from about 55 km west of Lookout Point to Ursus Islands. The number of Canada Geese observed in 1990 was significantly greater than that recorded in 1988 or 1989. Using a visibility correction factor, we estimate that approximately 18 000 moulting geese occurred along the Thelon River during the survey. This is the highest estimate ever made for the Thelon River, and it may reflect the expansion of the continental population of Canada Geese.

Other observations included 64 Tundra Swans, 354 Greater White-fronted Geese, and 658 Lesser Snow Geese. These counts were the highest for the three species since 1988. As the Snow Geese had already dispersed from their breeding sites, the locations of their colonies could not be determined. Nevertheless, they were present in the same areas as in previous years.

The Thelon River is a Key Habitat Site for migratory birds in the Northwest Territories because it supports more than 1% of the national populations of two subspecies of Canada Geese. It also qualifies as a Wetland of International Importance under the Ramsar Convention because it provides habitat to more than 10 000 ducks, geese and swans. In light of the review of the borders of the Thelon Game Sanctuary, which was motivated by the new Northern Mineral Policy, and in light of the importance of the Thelon River valley to migratory birds, we suggest that the valley remain within the sanctuary.

RÉSUMÉ

Nous avons effectué un inventaire aérien de Bernaches du Canada en mue au long des rivières Snowdrift et Thelon, le 9 et 10 juillet 1990. Cela fut le dernier d'une série de trois inventaires annuels entrepris en 1988. Nous avons pour objectifs: 1) de déterminer la distribution et l'abondance des bernaches le long des deux rivières, 2) de réévaluer l'importance de la rivière Thelon pour les oiseaux migrateurs, et 3) dans la mesure du possible, de noter toute autre observation d'oiseaux et de mammifères.

Nous avons dénombré 391 bernaches le long de la rivière Snowdrift et 12 807 sur la Thelon. La concentration la plus importante fut entre un point 50 km à l'ouest de Lookout Point jusqu'à Ursus Islands. Beaucoup plus de bernaches furent observées en 1990 qu'en 1988 ou 1989. À l'aide d'un coefficient de détection, nous estimons qu'environ 18 000 bernaches se trouvaient le long de la rivière Thelon. Jamais auparavant a-t-on dénombré autant de bernaches dans cette région. Cela peut être le résultat de la croissance de la population continentale de Bernaches du Canada.

Nous avons également observé 64 Cygnes siffleurs, 345 Oies rieuses et 658 Petites Oies des neiges. Ces trois dernières espèces furent observées en plus

grand nombre qu'en 1988 ou 1989. Comme les Oies des neiges avaient déjà quitté leurs nids, il fut impossible de localiser les colonies. Les oies furent toutefois observées aux mêmes endroits que dans le passé.

Plus de 1% de la population nationale de deux sous-espèces de Bernaches du Canada muent le long de la rivière Thelon. Par conséquent, cette rivière est un site clé pour les oiseaux migrateurs dans les Territoires du Nord-Ouest. Ce site mérite aussi le statut de "Zone humide d'importance internationale pour la sauvagine" tel que reconnu par la Convention Ramsar, parce que on y a observé plus de 10 000 oies, cygnes et canards. En vertu de la révision des limites de la Réserve de faune Thelon, engendrée par la nouvelle politique minière du ministère fédéral des Affaires indiennes et du Nord, nous suggérons que la vallée de la Thelon demeure dans la réserve.

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1.0 INTRODUCTION

Indian and Northern Affairs Canada released the Northern Mineral Policy in December 1986. At that time, a primary concern of the mining industry was access to northern lands for exploration and development. In this context, the Policy committed the federal government to a review of the Thelon Game Sanctuary to ensure that the lands it contains are necessary to achieve the conservation objectives for which it was established.

In 1990, The Canadian Wildlife Service completed a compilation of 80 key terrestrial sites for migratory birds in the Northwest Territories (Alexander and McCormick, in prep.). Any site that supports at least one percent of the Canadian population of a migratory bird species or subspecies, for any portion of the year, is considered to be a Key Habitat Site. Evaluations are based on the best available estimates of national and regional populations and the number of individuals present at each site.

The Thelon Game Sanctuary encompasses one Key Habitat Site: the Thelon River. In the past, this river has provided habitat for thousands of moulting Canada Geese^{1 2}. Up to 8 000 large Canada Geese, principally of the *maxima* and *moffitti* subspecies, were either counted or estimated to occur there in the late 1960's (Sterling and Dzubin 1967). In 1978, Dzubin et al. suggested that up to 13 500 large Canada Geese may moult each summer on the Thelon River, and that perhaps up to 125 000 geese moult in the "interior barrens of Keewatin and eastern Mackenzie".

Since then, continental populations of Canada Geese have continued to expand³. Thus, the Thelon River may support larger numbers of geese. In response to the Northern Mineral Policy, a three-year study was initiated in 1988 to examine the distribution and abundance of moulting Canada Geese along the Thelon River

¹ Scientific names of birds are given in Appendix 4.

² Some rivers in the eastern Mackenzie and Keewatin districts have been known to be important goose moulting areas for over a century (see Sterling and Dzubin 1967 for a review).

³ From 1.5 million geese in 1967 to 2.7 million in 1978, and to 3.3 million in 1989 (Anon. 1988, 1989).

and Snowdrift River, which is also known to harbour moulting geese. Relatively few geese were counted in 1988 and 1989: 4 449 and 6 511 on the Thelon River; 94 and 133 on the Snowdrift River, respectively (Alexander 1990, McCormick et al. 1990).

This report presents the results from the third and final survey. Our objectives were: 1) to determine the distribution and abundance of moulting Canada Geese on the Snowdrift and Thelon rivers, 2) to reassess the significance of the Thelon River as a Key Habitat Site, and 3) to record all bird and mammal species observed.

2.0 STUDY AREA

The study area includes 200 km of the Snowdrift River from its mouth, near the community of Snowdrift, to Sandy Lake (between 107°W and 108°W), and approximately 1 100 km of the Thelon River and associated lakes from Eyeberry Lake (63°08'N, 104°43'W) to the community of Baker Lake (64°19'N, 96°02'W, Fig. 1). The area's physiography, surficial geology, climate and vegetation were described in McCormick et al.(1990).

The Snowdrift River is usually 100-200 m wide, but is more than 1 km wide in some sections. It features several rapids, but water seems deep along most of its course, and the current appears generally slow. Meanders and sand bars are numerous and, in some locations, wetlands abound on each side of the river. These include ponds and marshes of emergent vegetation. Most of the river flows south of the treeline and is, accordingly, surrounded by boreal forest.

The Thelon River is wider (200-400 m) and faster than the Snowdrift River. Some of its enlargements are lakes that are more than 10 km wide. It features several rapids and water is shallow along much of its course. It features numerous meanders and extensive sand bars. Wetlands are not usually well developed along the shoreline of the river itself, but can be extensive nearby. In some locations, like Ursus Islands, there are thousands of ponds with a shoreline of emergent vegetation. Except for sheltered sites in the valley where trees occur, the river flows through low-Arctic tundra where there are vast wet and dry meadows of grasses and sedges.

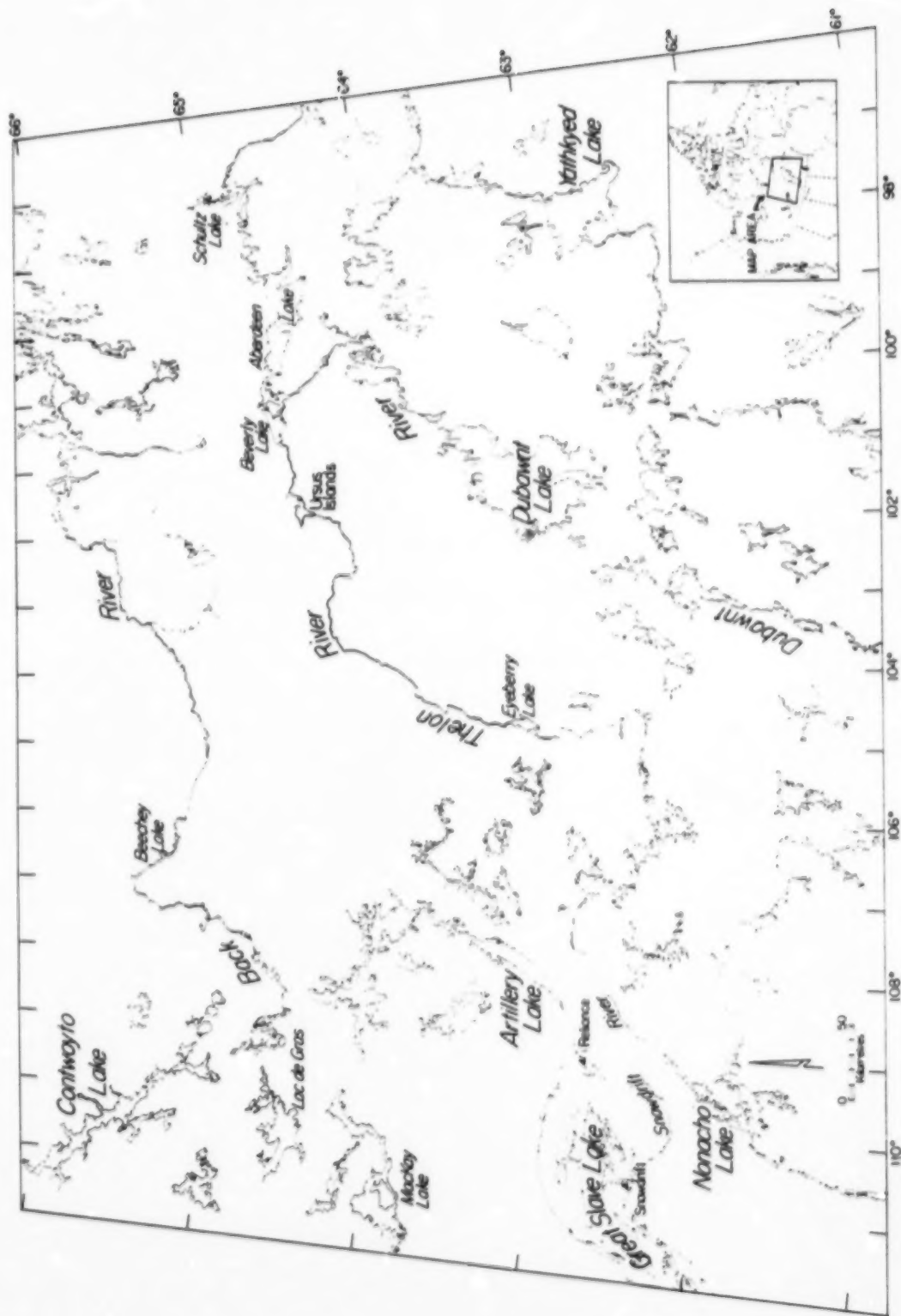


Figure 1. Location of the Snowdrift and Thelon rivers, Northwest Territories.

3.0 METHODS

The survey was flown on 9-10 July, 1990 in a Cessna 206 equipped with floats, at 60-100 m above ground, and at an air speed of approximately 200 km/h. One observer occupied the right front seat while the other was in the left rear seat. The front observer navigated along a pre-determined route which had been drawn on 1:250,000 topographic maps (Appendix 1). The route was chosen to maximize the amount of shoreline that could be observed. The route was modified from previous surveys at certain locations to further increase the amount of surveyed habitat. On very narrow sections of the river, we flew off the left side of the river and the right-hand observer recorded the birds. Searches of geese in upland areas were not undertaken.

The survey route was divided into 10-km units to facilitate the recording of data. In 1990, additional transects were flown over Grassy Island, Ursus Islands and the Dubawnt River delta in order to survey these areas completely. The size and identity of all flocks of geese and swans within sight of the survey route were noted. Observations of other birds species were also recorded.

4.0 RESULTS AND DISCUSSION

4.1 Survey conditions, accuracy, and coverage.

Weather during the survey was ideal with clear skies and moderate wind. Visibility of Canada Geese was good. The accuracy and precision of aerial surveys depend on a number of factors including the wildlife species, group size, behaviour, habitat type, weather, observer, and aircraft type. In general, aerial surveys underestimate animal numbers, and often in an inconsistent manner. Many authors have suggested correction factors to compensate for inaccuracies (Stott and Olson 1972, Caughley 1974, Haddock and Evans 1974, Cook and Jacobson 1979, Grier et al. 1981, Malecki et al. 1981, Caughley and Grice 1982, Savard 1982, Kavanagh and Recher 1983, Anon. 1987).

Visibility correction factors for moulting Canada Geese have never been published (A. Dzubin, CWS, pers. comm. in McCormick et al. (1990), R. Reynolds

and G. Smith, US Fish and Wildlife Service, pers. comm.). McCormick and Arner (1986) and McCormick and Bromley (1990) suggested a correction factor of 2.0 based on studies by Haddock and Evans (1975) and Stott and Olson (1972). However, Alexander (1990) questioned the validity of this correction factor and suggested that a factor of 1.4 was more appropriate. A detailed rationale for this conclusion is provided in his report. The latter correction factor will be used below.

Our survey covered the Snowdrift and Thelon rivers and several waterbodies nearby. However, in light of the countless ponds, small lakes and islands found near the Thelon River, particularly in transects 41-44, at Ursus Islands and in the Dubawnt River delta, several flocks of geese may have been missed. Counts of other species like ducks were likely underestimated because our attention was focused on geese. It is also possible that large numbers of geese grazing inland were missed because upland areas were not searched, and because dark geese walking on land are difficult to detect from the air.

Ice conditions on parts of the Thelon River system may have had an influence on both the distribution and abundance of Canada Geese. The Thelon River was entirely ice-free between Eyeberry and Beverly lakes. Beverly Lake was mostly ice-free although there were numerous ice pans in central areas. There was a considerable amount of ice along the northwestern shore of Aberdeen Lake but the southwestern shore was ice-free. Most of the eastern half of Aberdeen Lake was covered by ice, and so was 70-80% of Schultz Lake.

The higher numbers of geese recorded on the Thelon River in 1990, compared to 1988 and 1989, were likely related, in part, to the length of the survey route: approximately 1 105 km in 1990, and 1 025 km in 1989 and 1988.

4.2 Canada Geese

We counted 391 and 12 807 Canada Geese along the Snowdrift River and Thelon River, respectively (Appendix 2). Given the length of the survey route (Snowdrift: 200 km; Thelon: 1 105 km), about 2 and 12 Canada Geese/km were counted along the two rivers, respectively.

The Snowdrift River does not qualify as a Key Habitat Site at present. According to Dzubin et al. (1978), this river can support 500-1 000 moulting geese during the summer. We recorded less than 500 birds each year, in 1988-1990 (Appendix 3). The average of the 1989 and 1990 counts⁴ is 260 geese, a low figure in light of the 20% increase in the continental Canada Goose populations between 1978 and 1989 (Anon. 1989). However, if we use the correction factor (1.4) suggested by Alexander (1990), approximately 550 geese occurred on the Snowdrift River during the 1990 survey. Corrected or not, those numbers suggest that currently, the Snowdrift River is not an important moulting area for large Canada Geese. It may become more important if continental populations of Canada Geese continue to expand.

The abundance and distribution of Canada Geese along the Thelon River varied between 1988 and 1990 (Table 1; Appendix 3). Nevertheless, the relative importance of each section of the river was relatively constant. The most important area was "Islands in large bend to Ursus Islands" (transect 40-52 plus 20 km off-transect at Ursus Islands), where the highest numbers of geese have been consistently recorded since 1988. The greater number of birds observed in 1990 was reflected by higher densities of geese in all areas.

The total of nearly 13 000 geese recorded in 1990 falls within the range (7 100-13 500 moulting geese) estimated by Dzubin et al. (1978) for the Thelon River. However, in light of the limitations and the precision of our survey technique, it is possible that 20% more geese, or the equivalent of the increase in the continental population that took place since 1978, were present in the study area, but were not detected. The use of a correction factor of 1.4 (Alexander 1990) suggests that up to 18 000 moulting geese may have been present, or more than 30% greater than the upper limit of the range given by Dzubin et al. (1978). This estimate is the highest ever made for the Thelon River.

⁴ The 1988 survey was done later in July, when many geese had regained their ability to fly, and had probably left the area. The 1989 and 1990 surveys were scheduled earlier; just over 1% of the Canada Geese were able to fly during these surveys.

Table 1. Number and density (birds/km) of Canada Geese observed during aerial surveys along the Thelon River, in 1988, 1989 and 1990, and relative importance of different sections of the river.

Area ^a (km ^c)	1988			1989			1990		
	No. Birds birds	No. Birds /km	% ^b	No. Birds birds	No. Birds /km	%	No. Birds birds	No. Birds /km	%
Eyeberry Lake to before Grassy Isl. (80)	429	5.3	9.6	601	7.5	9.2	482	6.0	3.7
Grassy Is. to islands in large bend (110)	532	4.8	11.9	407	3.7	6.2	1218	11.0	9.5
Islands in large bend to Ursus Islands (155;175)	1178	7.6	26.4	2976	19.2	45.7	4441	25.4	34.6
Ursus Islands to Beverly Lake (40)	2	<0.1	<0.1	123	3.1	1.8	298	7.4	2.3
Beverly Lake N. and Thelon Islands (60)	669	11.1	15.0	688	11.4	10.5	1393	23.2	10.8
Aberdeen Lake N. (120)	291	2.4	6.5	562	4.7	8.6	1118	9.3	8.7
Schultz Lake N. and South (120;160)	12	0.1	0.3	68	0.5	1.0	406	2.5	3.1

Table 1. Continued.

Area (km)	1988			1989			1990		
	No. Birds birds	/km	%	No. Birds birds	/km	%	No. Birds birds	/km	%
Lower Thelon River (80)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aberdeen Lake S. (200;210)	1231	6.1	27.7	841	4.2	12.9	1915	9.1	14.9
Beverly Lake S. (60;70)	105	1.7	2.3	245	4.1	3.7	1536	21.9	12.0
Total (1025;1105)	4449	4.3	100.0	6511	6.3	100.0	12807	11.6	100.0

^a Areas were based on common habitat characteristics and distribution of geese. Their determination was subjective and somewhat arbitrary.

^b % of geese in a given area calculated from the total of geese counted during that year.

^c (km in 1988 and 1989;km in 1990). If only one entry is shown, survey route had similar length in all three years.

Only 6 511 geese were recorded in 1989 on the Thelon River, yielding an average of approximately 9 660 geese for 1989-1990 (see Footnote #4). It is apparent that large year-to-year variations may occur in the number of moulting birds. Late spring break up is known to have caused large annual variations in the number of Canada Geese staging in Great Slave Lake in the spring⁵. However, there is no evidence to suggest that the increased numbers on the Thelon River in 1990 resulted from a late spring (D. Curtis, pers. comm.; see McCormick et al. 1990).

At least five other river systems⁶ provide habitat to moulting Canada Geese in the eastern Mackenzie and Keewatin districts. Although site fidelity has been recognized in moulting geese (Sterling and Dzubin 1967), it is possible that varied factors may force them to move to different areas temporarily or permanently. For example, the Thelon River has become a popular recreational canoe route. Increased disturbance during the moulting season may discourage an increasing number of geese from moulting there.

4.3 Lesser Snow Geese

Snow Geese were the second most abundant species observed and were primarily in the western half of Aberdeen Lake. Some of these 658 white geese may have been Ross's Geese. This was an increase over the 1988 and 1989 totals of 235 and 444 geese, respectively. Nevertheless, their distribution was very similar. Some young birds were observed in transect 112. Small numbers of breeding Snow Geese have been observed from east Beverly Lake to west Aberdeen Lake by several people since the early 1900s (see McCormick et al. 1990 for a review). Blue Snow Geese were present but we did not record the colour-phase ratio of flocks.

Although the numbers of Snow Geese recorded in 1988-1990 are too small to

⁵ In 1988 when spring was late, a peak of 4 479 geese was recorded in one section of the North Arm. In 1987, spring was earlier, more open water was available regionally, and a peak of only 1 071 geese was recorded. In 1986, spring was somewhat milder than in 1987 and a peak of only 657 geese was recorded (Sirois and Cameron 1989).

⁶ Kazan, Dubawnt, Quoich, Back and Ellice rivers (see Dzubin et al. 1978, McCormick and Arner 1986, McCormick and Bramley 1990).

reflect any population trend, they are not inconsistent with the current growth of the midcontinent Lesser Snow Goose population (Anon. 1988, Anon. 1990). Recently, the large colonies of the central Canadian Arctic have grown considerably (Kerbes et al. 1983). We did not see any Snow Geese along the Snowdrift River.

4.4 Greater White-fronted Geese

We counted 354 Greater White-fronted Geese along the Thelon River. This was an increase over the 279 and 59 geese seen in 1988 and 1989, respectively. One hundred and thirty-five birds were observed at Ursus Islands and 75 birds were seen at the west end of Beverly Lake. No young was observed. Whitefronts are regular but not very common breeders in this area (see McCormick et al. 1990 for a review). Again, these numbers are too small to be of any significance, but are nonetheless consistent with suggestions that the eastern midcontinent population of this species is increasing (Anon. 1988). We did not see any Greater White-fronted Geese along the Snowdrift River.

4.5 Tundra Swans

We observed 64 Tundra Swans along the Thelon River, compared to 27 in 1989 and 46 in 1988. The birds were distributed from Grassy Island to Aberdeen Lake. The largest number (18) occurred at Ursus Islands. Small numbers of Tundra Swans have been regularly observed in this part of the Thelon River (see McCormick et al. 1990). As in 1988 and 1989, we did not see any evidence of nesting. All swans appeared flightless, as none were seen in flight. However, spring surveys in Great Slave Lake have shown that swans capable of flying do not usually take off when disturbed by a small aircraft (J.S., pers. obs.).

4.6 Other birds

All birds recorded are tabulated in Appendix 2. Most mergansers seen along the Snowdrift River appeared to be Common Mergansers, whereas most seen along the Thelon River seemed to be Red-breasted Mergansers. In both cases, most individuals were seen in flight. Most jaegers appeared to be Long-tailed Jaegers and most gulls, Herring Gulls. We suspect that most terns were Arctic

Terns, because of their abundance and wide distribution in the Northwest Territories.

5.0 KEY HABITAT SITE

Key Habitat Sites support, at some time during the year, 1% or more of the national population of a migratory bird species or subspecies (Alexander and McCormick, in prep.). Most of the large Canada Geese banded on the Thelon River in the past were apparently of the *maxima/moffitti* subspecies (Sterling and Dzubin 1967, Dzubin et al. 1978). According to band returns, these subspecies belong principally to the Eastern Prairie, Western Prairie and Giant Canada Geese (Mississippi Flyway) populations, which include approximately 555 000 individuals (Anon. 1989). Since approximately 13 000 geese were counted on the Thelon River in 1990, this represents more than 2% of these populations. If the Hi-Line (106 000 birds), Rocky Mountain (90 000) and Pacific (25 000) populations are added⁷, our count represents more than 1.5% of these six populations. If we correct our count with a correction factor of 1.4, these percentages vary between approximately two and three percent, depending on whether three or six populations are considered. The percentage would be even higher if only national populations were considered. However, all relevant information pertains to continental populations.

Thus, the Thelon River remains a Key Habitat Site, as designated in the past. However, we suggest that the Key Habitat Site should not extend east of Aberdeen Lake. Few geese were seen east of Aberdeen Lake in 1988-1990, and Schultz Lake appears to be regularly subject to late spring break-ups. We conclude that the two Key Habitat Sites formerly identified along the Thelon River (Middle Thelon River and Beverly-Aberdeen lakes [McCormick et al. 1984]) should be contiguous, as they were separated for no obvious reason.

The population of Canada Geese that moult along the Thelon River is apparently the second largest concentration of large Canada Geese in the Northwest Territories. Recently, McCormick and Bromley (1990) counted twice as many geese along the Back River. In light of the expansion of the continental population,

⁷ Some band returns came from these populations as well (Dzubin et al. 1978).

significant and larger numbers of geese than suggested by Dzubin et al. (1978) may now moult along the Quoich, Dubawnt and Kazan rivers as well.

Finally, the Thelon River qualifies as a "Wetland of International Importance especially as Waterfowl Habitat" under the Ramsar Convention (IUCN, no date) because it supports (and has for some time) 1% of the population of two subspecies of waterfowl, and more than 10 000 geese, ducks and swans.

In light of the new Northern Mineral Policy and the review of the limits of the Thelon Game Sanctuary, we suggest that the Thelon River valley remains within the sanctuary.

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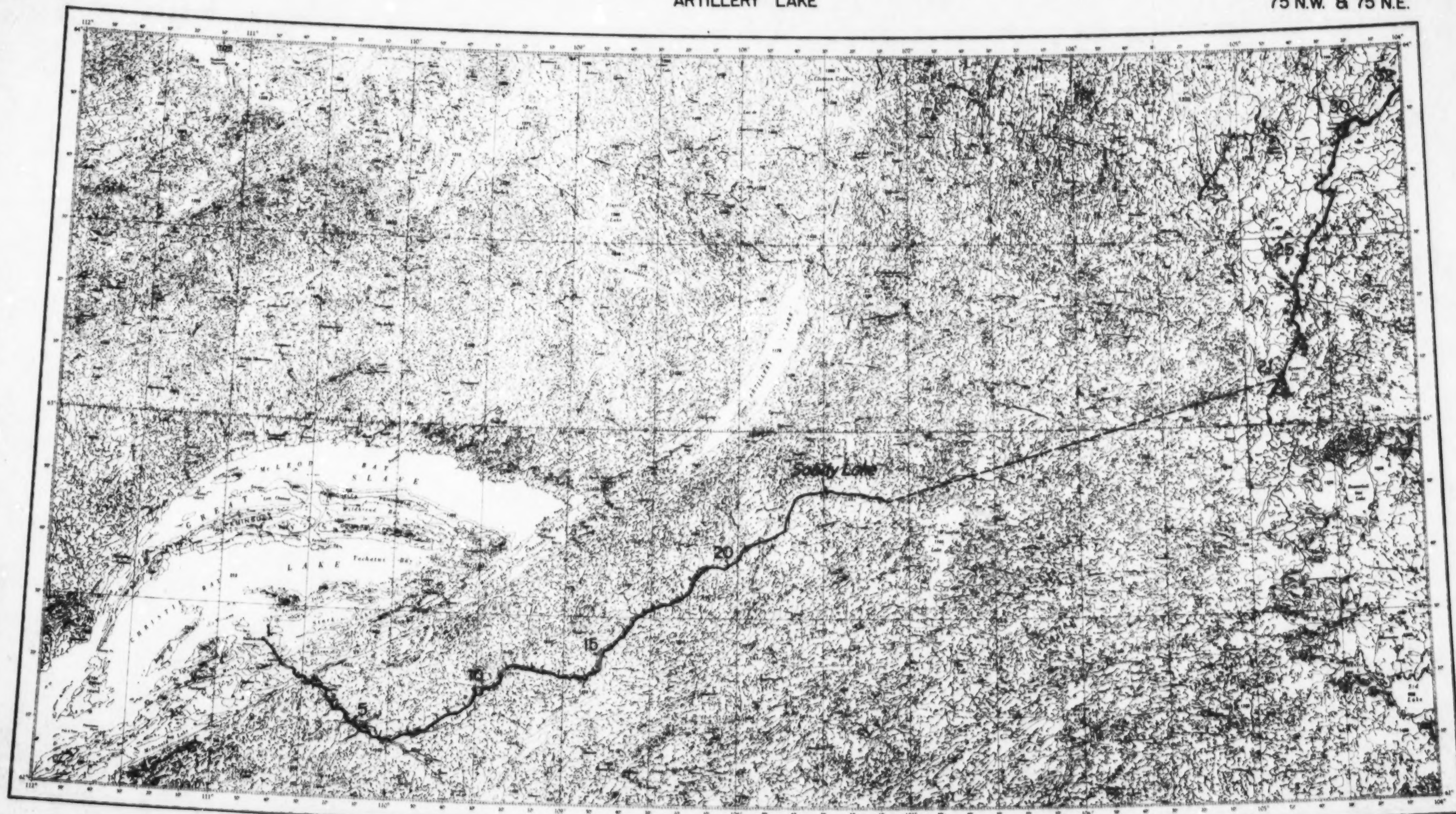
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Appendix 1. Maps of the route surveyed along the Snowdrift and Thelon rivers,
9-10 July, 1990.

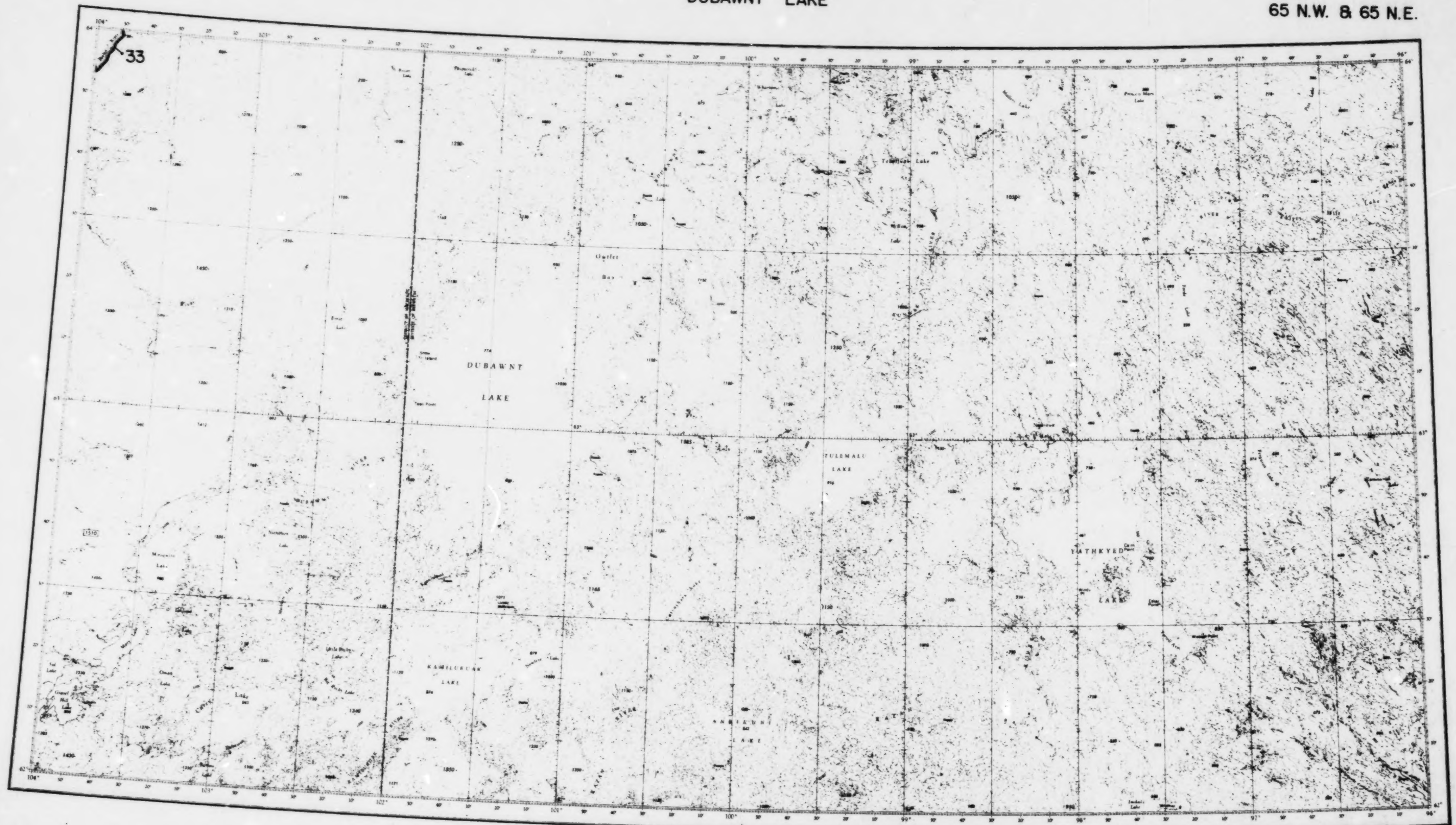
ARTILLERY LAKE

75 N.W. & 75 N.E.



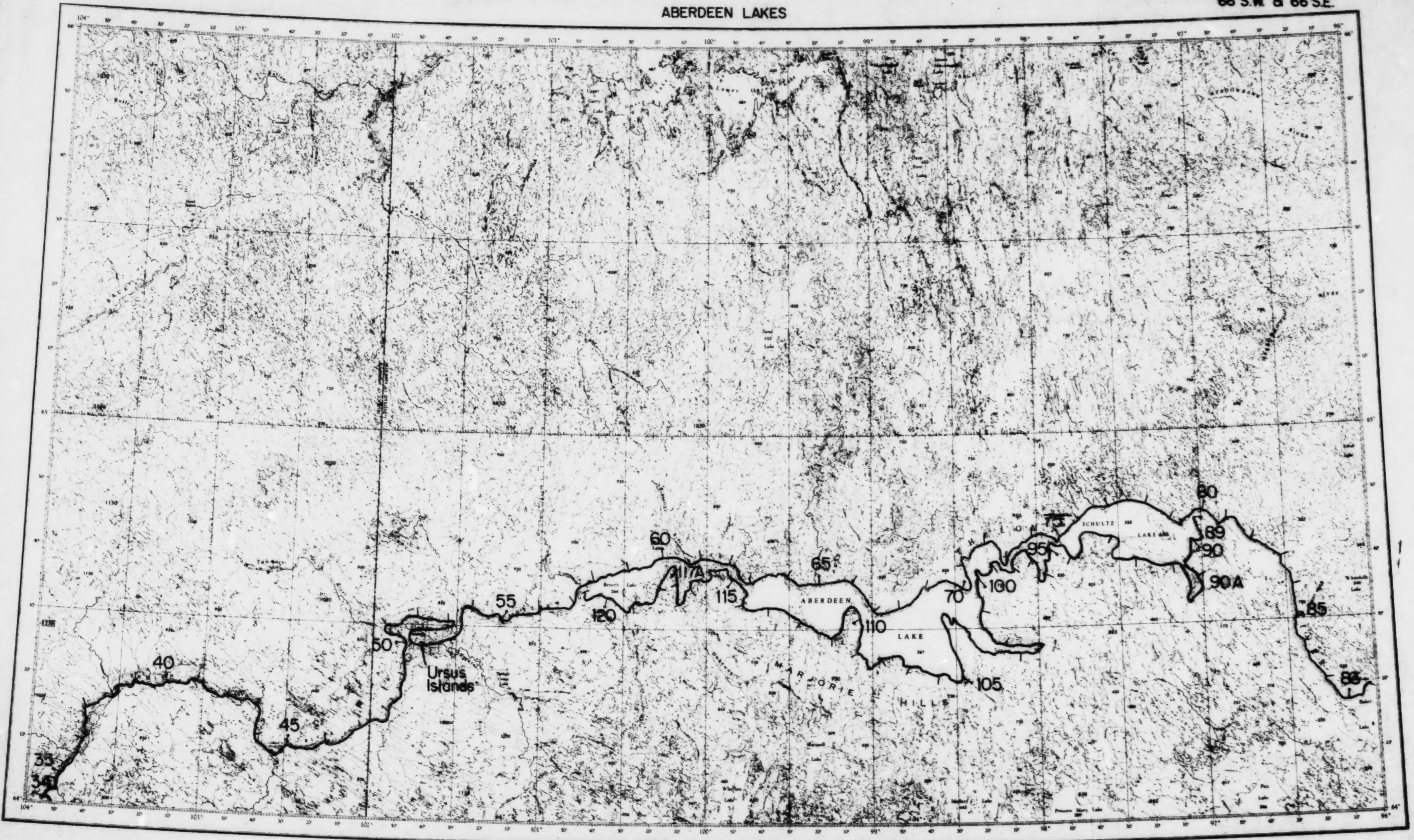
DUBAWNT LAKE

65 N.W. & 65 N.E.



ABERDEEN LAKES

66 S.W. & 66 S.E.



Appendix 2. Birds observed along the Snowdrift and Thelon rivers during aerial surveys, 9-10 July, 1990.

Segment	Species														
	TUSW	GMFG	SNGO	CAGO	DUCK	NOPI	AMWI	OLDS	COGO	MERG	JAEG	GULL	BOGU	RTLO	TERN

Snowdrift River

4									15							
5				85					1							
6					6				3		20	5				
7				11				4	8						1	
8				50												
9									2							
10									8							
12				4												
13									6			6				
15									5							
16				20					6							
17				10												
19				73	1											
20				66	2				9							
20 to Sandy Lakes				52	3											
Sandy Lakes				20	5											

Thelon River

21				98					1							
22				45					1							
23		10		143					1							
24				70					15						20	
25									4						20	
27				11					3		5					
28				115												
29	2	10		636	30				4		1					
30				42	2						2					
31	1			5					4							
33	1			15												
34	2			131					13							
35	1			169					1						30	
36	8			77	3				10							
37	2			132					1						2	
38	3															
39	7			11					4							
40				7												
41				141					1							
42			9	228											15	
43				215					3							
44	5			840												
45			1	22												
46				106	1										3	
47				17												
48				112					4						1	

Appendix 2. Continued.

Segment	Species													
	TUSW	GMFG	SNGO	CAGO	DUCK	NOPI	AMMI	OLDS	COGO	MERG	JAEG	GULL	BOGU	RTLO
49				27								2		1
Ursus Is.*	18	135	1	2718		70				12		7	4	55
53	3	3	2	245						1				
54				43									1	
55	3									1				
56				10						6				2
57		55	1	316				6						
58		20	2	395				10						
59				152	20					2				
60				380						8		1		2
61				120							1	2		
62	4			30										
63			153	317										
64		15	100	93										
65				115										
66	4		20	124							25			
67			10							15				10
68				29								1		
69		2		130								3		
70				36										
71			5	84										
72				65										
73				65								1		
74			2	60								5		
75				75										
76				62										5
77												1		
78				8								1		
80												2		
81												1		
82												1		
83												5		
85												2		
87												1		
88												2		
89												1		
90											1			
90A*		3		79								1		
91				20								1		
92*				42										
93*				70										
94				50										
95				14										
96				111								1		
97				141								1		
98				14						1				
99				12										

Appendix 2. Continued.

Segment	Species													
	TUSW	GMFG	SNGO	CAGO	DUCK	NOPI	AMMI	OLDS	COGO	MERG	JAEG	GULL	BOGU	RTLO
100				67							3			
101		2		26						2		1		
102		4		50			1							
103				18										
104*			5	272				8			1			30
105				17										1
106				69				1		2				2
107		6	2	68										
108				64								1		
109			10	209						9				3
110			55	395				2		3	1			6
111				129						7				2
112		14	2y	35						1				
113		1	2	19						10		1		
114		2	89	185								1		
115		20	2	353			3							1
116		10	24	57										2
117*		14	103	29	3			8						
117A*		28	58	357	3							1		
118*				383						3				1
119				80										
120				277		2								

* Survey route slightly modified compared to 1989 and 1988.

Appendix 3. Distribution of Canada Geese along the Snowdrift and Thelon rivers, 1988-1990.

Transect	1988	1989	1990
Snowdrift River			
4		40	
5			85
6		15	
7			11
8	22		50
10	18	30	
11	24		
12			4
16		10	20
17	29		10
18	1	9	
19		15	73
20		4	66
20 to Sandy L. incl.	ns ¹	ns	72
Thelon River Eyeberry Lake to before Grassy Island			
21	75	227	98
22	16	53	45
23	26		143
24	99	122	70
25	23	171	
26	40	2	
27			11
28	150	26	115
Grassy Island to islands in large bend			
29	155	7	636
30	60	47	42
31	132	5	5
32		50	
33		15	15
34	6		131
35	99	102	169
36	43	136	77
37			132
38	34	40	
39	3	5	11

Appendix 3. Continued.

Transect	1988	1989	1990
Islands in large bend to Ursus Islands			
40	45	15	7
41	50	40	141
42	70	125	228
43	62	171	215
44	136	234	848
45		146	22
46	60	132	106
47	30	71	17
48		168	112
49	94	61	27
50	75	92	
51	98	492	
52	5	195	
Ursus Is.*	453	1034	2718
Ursus Is. to Beverly L.			
53		4	245
54	2	63	43
55		24	
56		32	10
Beverly L. N and Thelon Is.			
57		235	316
58	357	96	395
59		10	152
60	282	60	380
61	30	96	120
62		191	30
Aberdeen L. N to Schultz L.			
63	140		317
64		101	93
65		25	115
66	30	45	124
67		70	
68	14	15	29
69	55	42	130
70	35	4	36
71	6	35	84
72			65
73	11	117	65
74		108	60

Appendix 3. Continued.

Transect	1988	1989	1990
Schultz L. N and S			
75			75
76		6	62
77	12		
78			8
79			
80			
89			
90			
90A*	ns	ns	79
91			20
92*			42
93*		55	70
94		7	50
Lower Thelon River: Schultz L. to Baker L.			
81			
82			
83			
84			
85			
86			
87			
88			
Aberdeen L. S			
95	3	32	14
96	120	26	111
97	100	47	141
98	70	2	14
99	20		12
100			67
101	30		26
102	30	11	50
103	101	40	18
104*		31	272
105	7	55	17
106	40	2	69
107	100	131	68
108		33	64
109		55	209
110	317	173	395
111	85	115	129
112	58	80	35
113			19
114	75	8	185

Appendix 3. Continued.

Transect	1988	1989	1990
Beverly L. S			
115		30	353
116	30	49	57
117*		4	29
117A	ns	ns	357
118*		32	383
119		130	80
120	55		277

@ ns = not surveyed

* Survey route slightly modified in 1990.

Appendix 4. Common and scientific names¹, and codes for species of birds mentioned in this report.

Common Name	Code	Scientific Name
Red-throated Loon	RTLO	<u>Gavia stellata</u>
Tundra Swan	TUSW	<u>Cygnus columbianus</u>
Greater White-fronted Goose	GWFG	<u>Anser albifrons</u>
Lesser Snow Goose	SNGO	<u>Chen caerulescens caerulescens</u>
Ross's Goose	ROGO	<u>Chen rossii</u>
Canada Goose	CAGO	<u>Branta canadensis</u>
Unidentified duck	DUCK	
Northern Pintail	NOPI	<u>Anas acuta</u>
American Wigeon	AMWI	<u>Anas americana</u>
Common Goldeneye	COGO	<u>Bucephala clangula</u>
Oldsquaw	OLDS	<u>Clangula hyemalis</u>
Red-breasted Merganser	REME	<u>Mergus serrator</u>
Common Merganser	COME	<u>Mergus merganser</u>
Merganser	MERG	<u>Mergus</u> sp.
Sandhill Crane	SACR	<u>Grus canadensis</u>
Long-tailed Jaeger	LTJA	<u>Stercorarius longicaudus</u>
Unidentified Jaeger	JAEG	<u>Stercorarius</u> sp.
Herring Gull	HEGU	<u>Larus argentatus</u>
Unidentified Gull	GULL	<u>Larus</u> sp.
Bonaparte's Gull	BOGU	<u>Larus philadelphia</u>
Arctic Tern	ARTE	<u>Sterna paradisaea</u>
Unidentified Tern	TERN	<u>Sterna</u> sp.

¹ After A.O.U. (1983).